

Hannah Hasson

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<https://hrhasson.github.io/>

EDUCATION

University of Rochester

Ph.D in Physics

Anticipated Summer 2023

Master of Arts in Physics

May 2021

University of Texas at Austin

Bachelor of Science in Physics, Bachelor of Science in Astronomy

May 2018

Special Honors in Astronomy

Overall GPA: 3.68/4.0

TECHNICAL STRENGTHS

Computer Languages

Python, Mathematica, MATLAB, Bash, HTML & beginner Fortran

Software & Tools

VisIT, LaTeX, ImageJ, Inventor/AutoCAD, Excel

Hard skills

Soldering, mill, lathe, basic and high-voltage electronics, operating high-power optical lasers, alignment of optical systems, fiber optic alignment, interferometer construction

Communication

Comfortable with public speaking, intermediate Spanish speaker

RESEARCH EXPERIENCE

University of Rochester Physics & Astronomy Dept

August 2018 - present

Graduate Research Assistant under P. Gourdain

Rochester, NY

- Simulating pulsed power accretion outflows experiment with 3D PERSEUS MHD code
- Running plasma accretion outflow experiments on Cornell's COBRA driver
- Constructed shearing interferometer/shadowgraph diagnostic in Gourdain lab

Sandia National Lab

June - August 2019

Graduate Research Intern under C. Myers

Albuquerque, NM

- Wrote MATLAB scripts to test b-dot calibration methods for Z Machine
- Helped construct shadowgraphy plasma diagnostic for Mykonos driver

University of Texas Astronomy Department

August 2016 - August 2018

Undergraduate Researcher under K. McQuinn

Austin, TX

- Observed for 3 nights on the 107" telescope at McDonald Observatory
- Used IRAF code to reduce CCD image data and calculate star formation rates of dwarf galaxies

Rice University Physics & Astronomy Department

June 2014 - Jan 2018

Undergraduate Researcher under E. Liang

Houston, TX

- Built and tested novel scintillator gamma-ray spectrometer
- Collected spectral data and served as co-lead for positron experiment at Texas Petawatt Laser
- Conducted filter stack spectrometer calibration tests with Na-22 source

FUNDED GRANT PROPOSALS

NSF Career Award Addendum Proposal for the Computational Research Access Network (CRANE)
\$94194 awarded for 2022-2023
D Schaffner, **H Hasson**, N Vazirani, S Humane, L Horimbere, A Hayes, S Negussie.

PUBLICATIONS

Radial-to-Axial Flows in a Scaled Pulsed-Power Scheme for Producing Outflows Resembling YSO Jets

HR Hasson, IN Erez, M Evans, I West-Abdallah, J Young, J Angel, C Chen, E Freeman, JB Greenly, DA Hammer, BR Kusse, ES Lavine, WM Potter, P-A. Gourdain

In review

True optical spatial derivatives for direct phase gradient measurements

P-A Gourdain, IN Erez, M Evans, **HR Hasson**, J Nagasako, JR Young, and I West-Abdallah

DOI: 10.1364/OPTCON.481196

Published 2023/4/3

A Scintillator Attenuation Spectrometer For Intense Gamma-Rays

E Liang, KQ Zheng, K Yao, W Lo, **H Hasson**, A Zhang, M Burns, WH Wong, Y Zhang, A Dashko, H Quevedo, T Ditmire, G Dyer

DOI: 10.1063/5.0082131

Published 2022/6/2

Using extended MHD to explore lasers as a trigger for x-pinch

JR Young, MB Adams, **H Hasson**, I West-Abdallah, M Evans, P-A Gourdain

DOI: 10.1063/5.0060581

Published 2021/10/28

Coreless Fast Pulsed-Power Drivers

P-A Gourdain, M Evans, P Efthimion, R Ellis, W Fox, **HR Hasson**, H Ji, RV Shapovalov, JR Young, I West-Abdallah

DOI: 10.1109/TPS.2021.3086322

Published 2021/6/22

Design of a 3-D Printed Experimental Platform for Studying the Formation and Magnetization of Turbulent Plasma Jets

HR Hasson, MB Adams, M Evans, R Shapovalov, I West-Abdallah, J Young, J Greenly, D Hammer, B Kusse, C Seyler, A Frank, P-A Gourdain

DOI: 10.1109/TPS.2020.3020000

Published 2020/09/18

Current adding transmission lines for compact MA-class linear transformer drivers

P-A Gourdain, MB Adams, M Evans, **HR Hasson**, RV Shapovalov, RB Spielman, JR Young, I West-Abdallah

DOI: : 10.1103/PhysRevAccelBeams.23.030401

Published 2020/3/30

Low-Inductance Load Test of a New 250-Ka, 150-Ns Pulser for Fast X-Pinch Sources

R Shapovalov, M Adams, M Evans, **H Hasson**, J Young, I West-Abdallah, PA Gourdain

DOI: : 10.1109/PPPS34859.2019.9009748

Published 2019/6/23

Enhancing cylindrical compression by reducing plasma ablation in pulsed-power drivers

P-A Gourdain, MB Adams, M Evans, **HR Hasson**, RV Shapovalov, JR Young, I West-Abdallah

DOI: : 10.1063/1.5086305

Published 2019/4/17

High e⁺/e⁻ ratio dense pair creation with 1021 W.cm⁻² laser irradiating solid targets

E Liang, T Clarke, A Henderson, W Fu, W Lo, D Taylor, P Chaguine, S Zhou, Y Hua, X Cen, X Wang, J Kao, **H Hasson**, G Dyer, K Serratto, N Riley, M Donovan, T Ditmire

DOI: : 10.1038/srep13968

Published 2015/9/14

TALKS & POSTERS

Promoting BIPOC and Marginalized Students to Pursue Computational Physics through CRANE

Invited talk presented with I. West-Abdallah at the 2023 Omega Laser User Group (OLUG) conference

Promoting BIPOC and Marginalized Students to Pursue Computational Physics through CRANE

Talk presented with I. West-Abdallah at the 2022 APS Division of Plasma Physics conference

Experimental Results of Pulsed-Power-Driven Radial and Rotating Outflows to Study Accretion-Driven Stellar Jets

Poster presented at the 2022 APS Division of Plasma Physics

Experimental Results from a Pulsed-Power Platform to Study Accretion-Driven Astrophysical Outflows

Invited talk presented at the 2022 Z Fundamental Science Workshop conference

Experimental Results from a Pulsed-Power Platform to Study Accretion-Driven Astrophysical Outflows

Poster presented at the 2022 High Energy Density Laboratory Astrophysics conference

Studying the Collimation of Outflows in Radially Converging Plasmas from a 3D-Printed Load

Poster presented at the 2021 APS Division of Plasma Physics conference

The Generation of Magnetized Jets Using 3D Printed Loads on a Pulsed-Power Driver

Poster presented at the 2020 ZNetUS conference

The Generation of Magnetized Jets Using 3D Printed Loads on a Pulsed-Power Driver

Poster presented at the 2019 APS Division of Plasma Physics conference

A Study of Magnetized Jet Stability Using High Energy Density Plasmas

Invited talk given at the 2019 Pulsed Power and Plasma Science conference

A Study of Magnetized Jet Stability Using High Energy Density Plasmas

Poster presented at the 2019 Women in Space conference

A Study of Disk-Jet Transitions Using Pulsed-Power Generators

Poster presented at the 2018 APS Division of Plasma Physics conference

TEACHING & OUTREACH

Computational Research Access Network (CRANE)

Dec 2021 - present

Co-founder, Curriculum developer, lecturer, teaching assistant

- Co-developing lessons and program structure for python-based computational methods workshop for undergrad level
- Teaching two-hour lectures on basic Python and computational methods
- Mentoring students and helping them apply for paid research internships
- See www.cranephysics.org

Gourdain lab summer high school internship program*Program lead, curriculum developer, graduate mentor*

August 2020, July 2021, July 2022

University of Rochester

- Co-designed month-long introduction to research curriculum with I. West-Abdallah (see <https://hrhasson.github.io/outreach.html>)
- Developed and taught three-day introductory Python course (see <https://github.com/hrhasson/>)
- Mentored pairs of high school students through experimental laser diagnostic projects

Center for Matter at Atomic Pressures (CMAP) Summer School*Lecturer*

August 2021

University of Rochester

- Led 3 hour workshop on simulating a simple accretion-to outflow system in 2D hydrodynamics with python

PHY 122P (Electricity & Magnetism), PHY 121P (Mechanics)*Graduate Teaching Assistant*

August 2018 - May 2019

University of Rochester

- Head TA for two semesters of flipped-classroom undergraduate introductory physics courses. Worked one-on-one teaching students, graded exams, met with students needing guidance

AST 307 (Intro Astronomy)*Undergraduate teaching assistant*

Fall 2017

University of Texas at Austin

- Provided in-class assistance for students
- Shared grading of assignments and exams with graduate TA

AWARDS & HONORS

Laboratory for Laser Energetics Horton Graduate Fellowship

Fall 2022- Spring 2023

High Energy Density Laboratory Astrophysics conference poster award

*May 2022***LEADERSHIP**

Physics & Astronomy Department DEI committee*Committee member*

August 2021 - present

University of Rochester

- Meet monthly with faculty about department policies to improve department culture and resources for marginalized students

Physics & Astronomy Graduate Student Association*Secretary, President*

August 2019 - July 2022

University of Rochester

- Successfully advocated for department to handle payment of student healthcare
- Conducted events for career development, outreach, and community building among physics graduate students
- Assisted the department's Graduate Admissions Committee with recruiting weekend for admitted students
- Served on the department's Diversity, Equity and Inclusion committee

Graduate Women of Physics and Astronomy (WoPAS)*Board Member*

October 2018 - Aug 2021

University of Rochester

- Organizing mentorship and community among women graduate students in physics